Technology Assessment and Transition Management (TATM) Overview

29 August 2007

Presented to:

Mrs. Kathleen Harger

Assistant Deputy Under Secretary of Defense

(Innovation & Technology Transition)

Presented by:

Dr. Virginia Young

ASTD Director

Distribution authorized to DoD and DoD contractors only; Critical Technology; August 2001. Other requests for this document shall be referred to the U.S. Army RDECOM, ATTN: AMSRD-AMR.

AMRDEC

STRENGTH THROUGH TECHNOLOGY

TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

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Briefing Outline

- **TATM Process**
- **TATM Process Adaptability**
- **Summary**

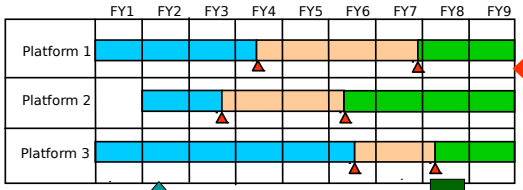
The TATM Process

Provides a Uniform Basis for S&T Transition

Management

- **Technology Assessment Language**
  - Agreed-to definitions
  - Common vocabulary
- **Assessment of Schedule**
  - Compatible programmatic milestone dates
  - Mutual awareness of progress/delays
- **Assessment of Risk**
  - Technical risk
  - Programmatic risk
  - Schedule risk
- **Risk Mitigation Planning**
  - Multiple contingent S&T initiatives where possible

PEO Programs



Army S&T
- DARPA
- LSI
  - IR&D
  - CRAD

Joint/Unified Laboratory
- Research
- Programs

S&T Objective Projects

Office of Homeland Security

U. S. Industry S&T

National Laboratory S&T

International S&T

Products for the Warfighter

User Needs, Requirements, Experiments, Assessments, Logistics Support and Training

TATM Process and Tool Suite Lifts the Fog of Transitioning Technology

What TATM Provides

- Accelerated flow of technology to the Warfighter
- Optimized communication among Stakeholders
- Reduced system and subsystem development cost, schedule and performance risk
- Improved life cycle management
- Common management of Technology Transition
- Decision support Tool Suite that facilitates the process through data collection and report generation
- Consolidated Roadmaps linking developing technologies with PEO acquisition programs
- Technology Transition Agreements (TTAs) between all Stakeholders

How TATM Helps

- **Allows Comprehensive Assessments of Supporting Technology Projects**
- **Speeds Technology Transition**
- **Manages Risks Involved with the Transitioning of New Technologies**
- **Improves Effectiveness of Technology Development to fill Perceived Capability Gaps for the Future Forces**

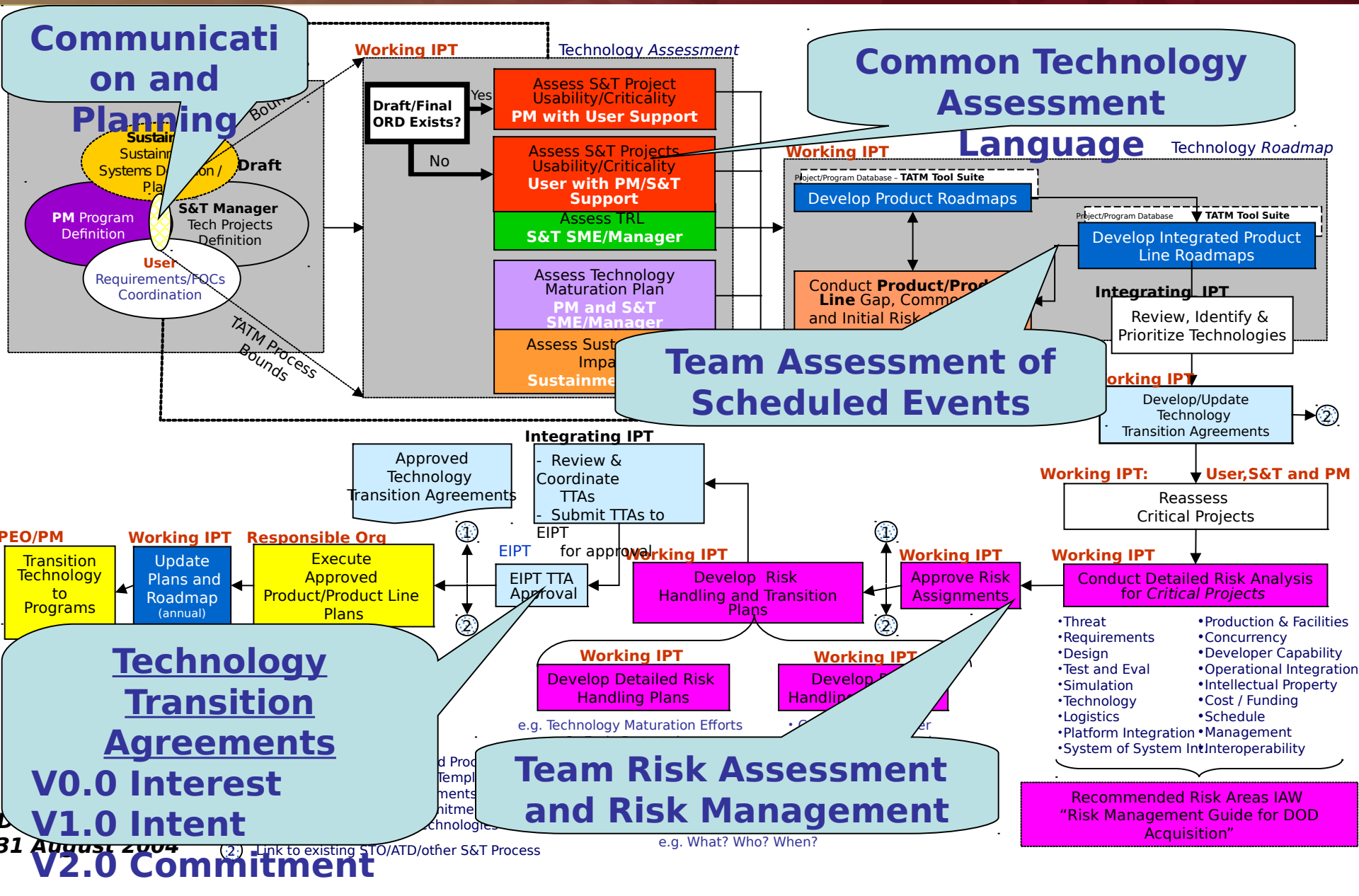
What TATM Process Is NOT

Aviation Technology Assessment and Transition Management addresses a PEO/AMRDEC/AMCOM/USAAVNC and below, process for defining and coordinating technology transition.

It does *not*:

- **Change processes internal to the supporting organizations, other than**
  - **TATM Process**
  - **TATM Management Framework**
- **Establish individual or organizational incentives**
- **Direct resource allocation**
  - **Identifies gaps, HTI opportunities, etc**
  - **Identifies where resources could be applied for greatest leverage**
- **Change Army and above process**
  - **Interfaces with and provides output to them**

TATM Process Detail


Communication and Planning
Common Technology Assessment Language
Team Assessment of Scheduled Events
Team Risk Assessment and Risk Management
Technology Transition Agreements
V0.0 Interest
V1.0 Intent
V2.0 Commitment
Working IPT
Technology Assessment
Draft/Final ORD Exists?
Yes
No
Assess S&T Project Usability/Criticality PM with User Support
Assess S&T Projects Usability/Criticality User with PM/S&T Support
Assess TRL S&T SME/Manager
Assess Technology Maturation Plan PM and S&T SME/Manager
Technology Roadmap
Project/Program Database – TATM Tool Suite
Develop Product Roadmaps
Develop Integrated Product Line Roadmaps
Integrating IPT
Review, Identify & Prioritize Technologies
Working IPT
Develop/Update Technology Transition Agreements
Working IPT: User,S&T and PM
Reassess Critical Projects
Working IPT
Conduct Detailed Risk Analysis for Critical Projects
•Threat •Requirements •Design •Test and Eval •Simulation •Technology •Logistics •Platform Integration •System of System Int
•Production & Facilities •Concurrency •Developer Capability •Operational Integration •Intellectual Property •Cost / Funding •Schedule •Management •Interoperability
Recommended Risk Areas IAW "Risk Management Guide for DOD Acquisition"
Working IPT
Approve Risk Assignments
Working IPT
Develop Risk Handling and Transition Plans
Working IPT
Develop Detailed Risk Handling Plans
e.g. Technology Maturation Efforts
e.g. What? Who? When?
Integrating IPT
- Review & Coordinate TTAs
- Submit TTAs to EIPT for approval
EIPT
EIPT TTA Approval
Approved Technology Transition Agreements
Responsible Org
Execute Approved Product/Product Line Plans
Working IPT
Update Plans and Roadmap (annual)
PEO/PM
Transition Technology to Programs
Draft
PM Program Definition
S&T Manager Tech Projects Definition
User Requirements/FOCs Coordination
TATM Process Bounds
(1) Link to existing STO/ATD/other S&T Process
(2) Link to existing STO/ATD/other S&T Process
31 August 2004

Briefing Outline

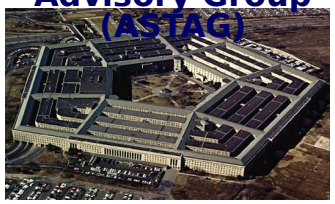
- **TATM Process**
- **TATM Process Adaptability**
- **Summary**

Process Adaptability

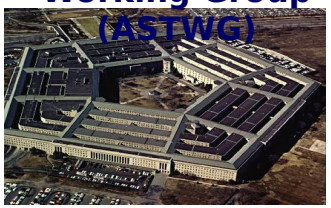
- **PEO Aviation Management Framework**
- **Robotic Systems Joint Project Office (RS JPO) Management Framework**
- **PEO Soldier Management Framework**

TRANSITION TECHNOLOGY FASTER

PEO Aviation TATM Management Framework



Army S&T Advisory Group (ASTAG)



Army S&T Working Group (ASTWG)

- Warfighter Technical Council (WTC)
- Technical Council (TC)
- Acquisition Council (AC)

TTAs

Existing Army and DOD Process

Working IPT

Working IPT

Working IPT

Working IPT Input

Working IPT

Working IPT

Executive IPT

Integrating IPT

TTAs

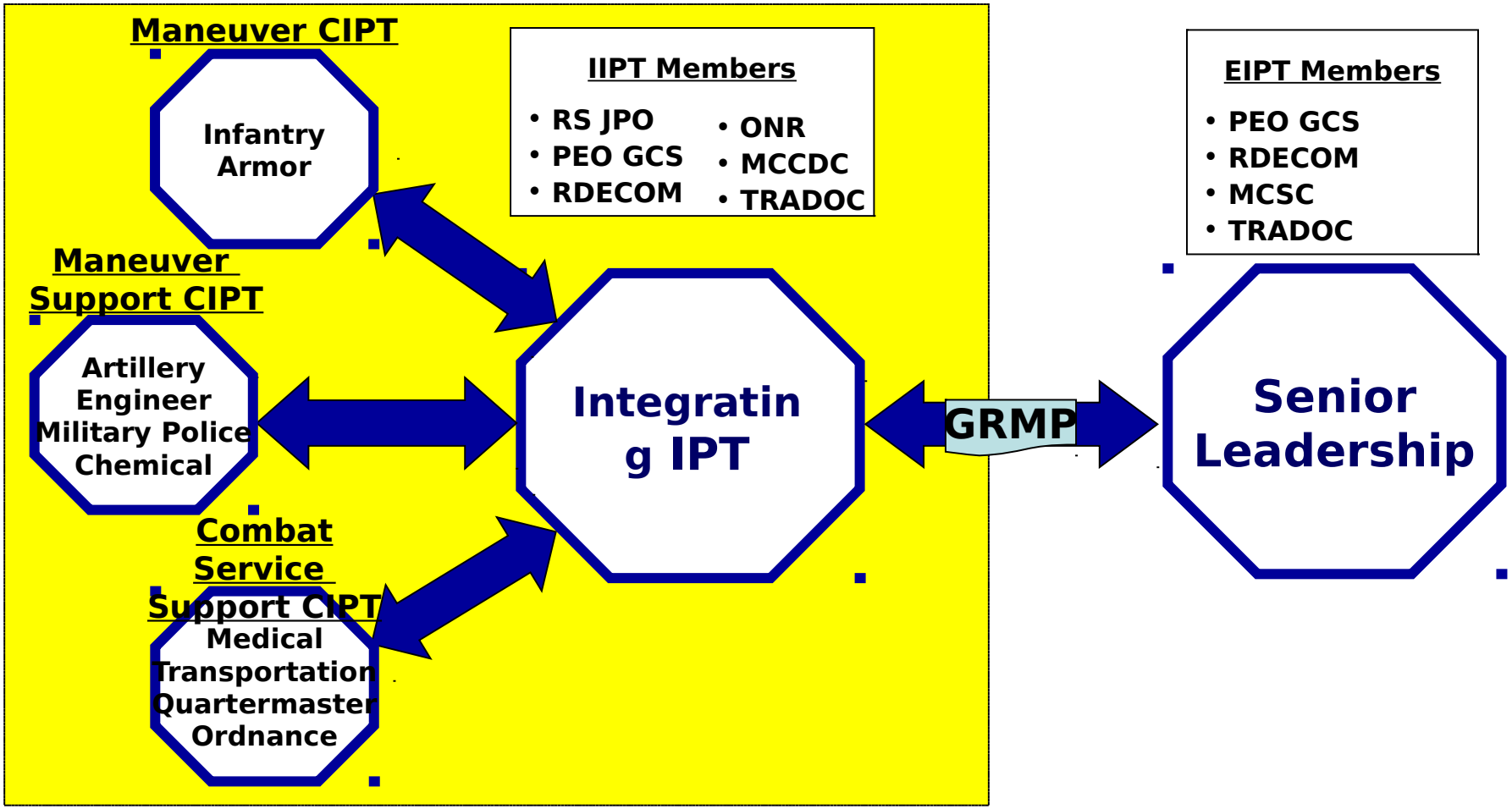
GOSC

CoDC

Council of Deputies/Directors and Colonels (CoDC)

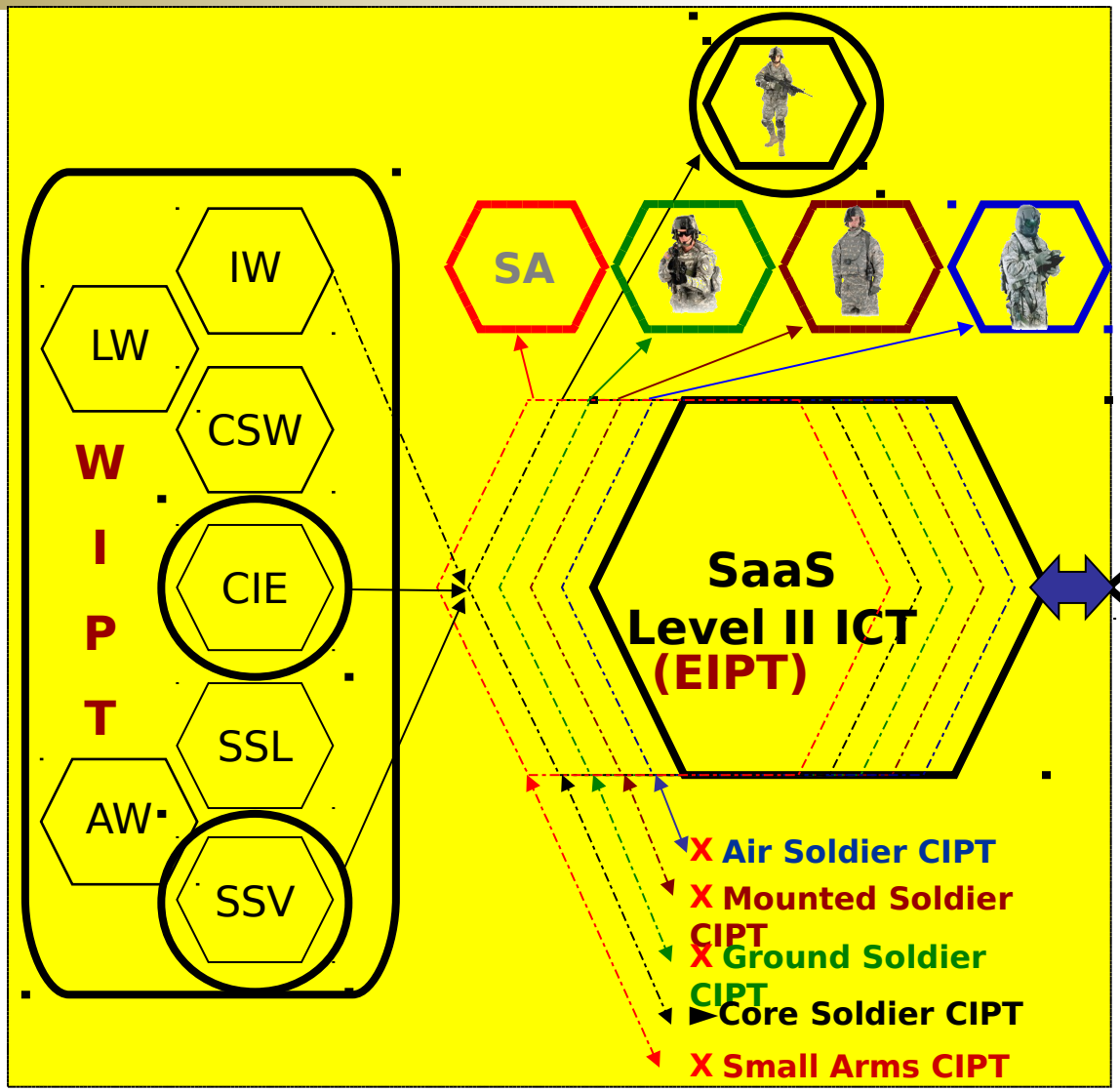
An Aviation GOSC

RS JPO TATM Management Framework



The TATM Process Ensures a Structured Approach to Developing the GRMP as a True Planning Document

PEO Soldier TATM Management Framework Overview (Core Soldier)



- JCTD
- ATO/MTO
- SBIR/STTR
- DACP/FCT
- Other

SaaS
Level I ICT
(GOSC)

GOSC Adjunct
- ARDEC
- AMRDEC
- AMCOM
- CERDEC
- CECOM
- TACOM
- PEO Ammo

Other Adjunct
- ARL
- DARPA
- ECBC
- TARDEC
- JPEO CBD

≈ 380 Products & /Programs

Objective 5 Coordinating IPTs

Draft/Pre-Decisional

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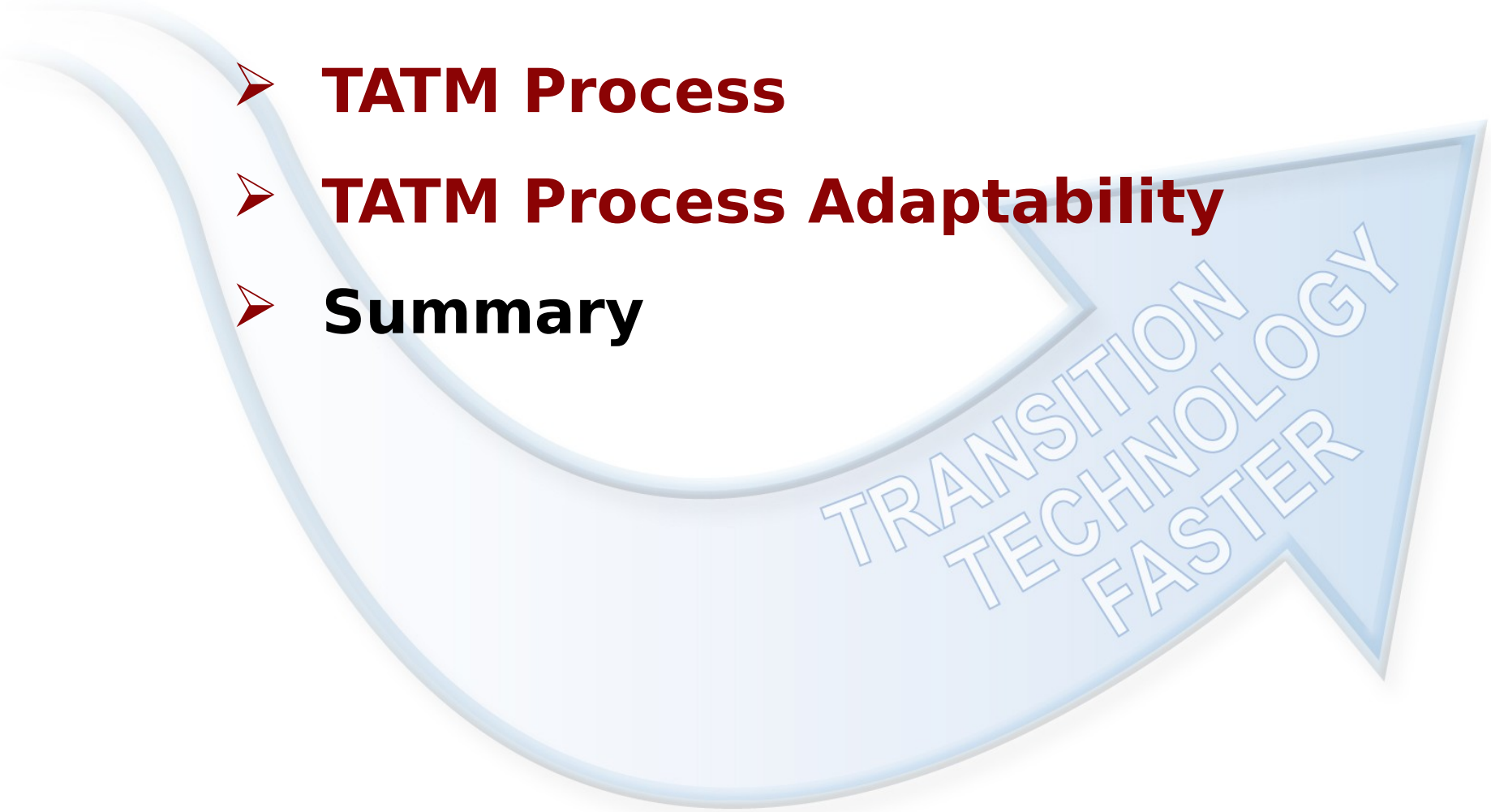

Lessons Learned

- **Each Stakeholder must see benefit in the Process**
- **Management support is necessary**
  - **Regular IIPT and EIPT meetings**
  - **Utilize the information generated**
  - **Adequate funding is *always* needed**
- **TATM Tool Suite data must be accurate and current**
- **Technology Coordinator role is pivotal to the Process**
- **TATM schedule provides for optimum benefit to Stakeholders**

TATM Process Summary

- **TATM Process was developed by all stakeholders in Army Aviation along with assistance from DAU**
- **TATM Process provides a uniform basis for technology transition management**
- **TATM Tool Suite allows Efficient Process Management**
- **TATM Process has proven to be adaptable to different management frameworks**

Questions/Comments

Technology Assessment and Transition Management (TATM) Tool Suite Overview

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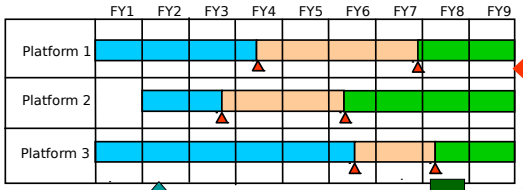

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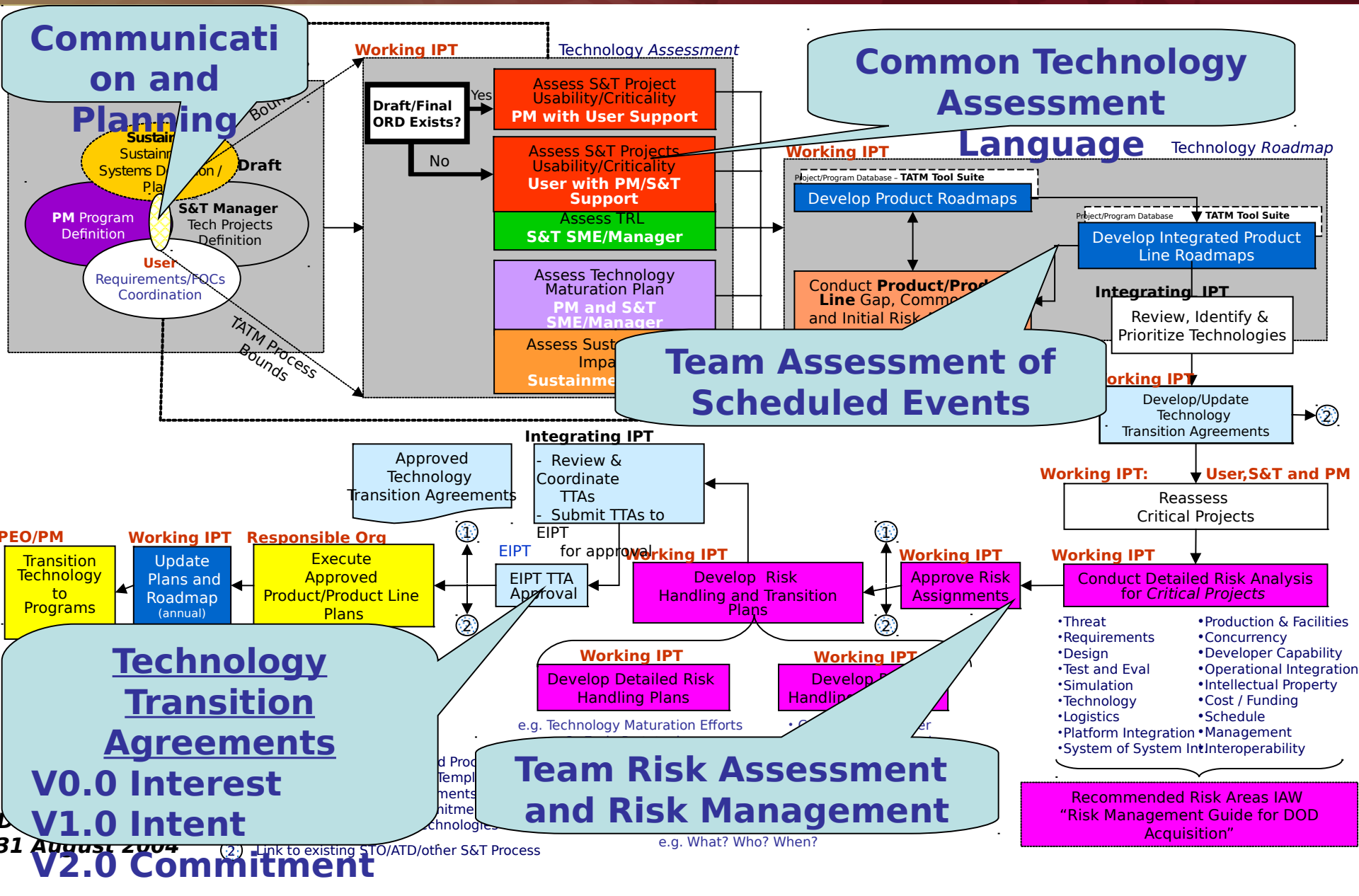
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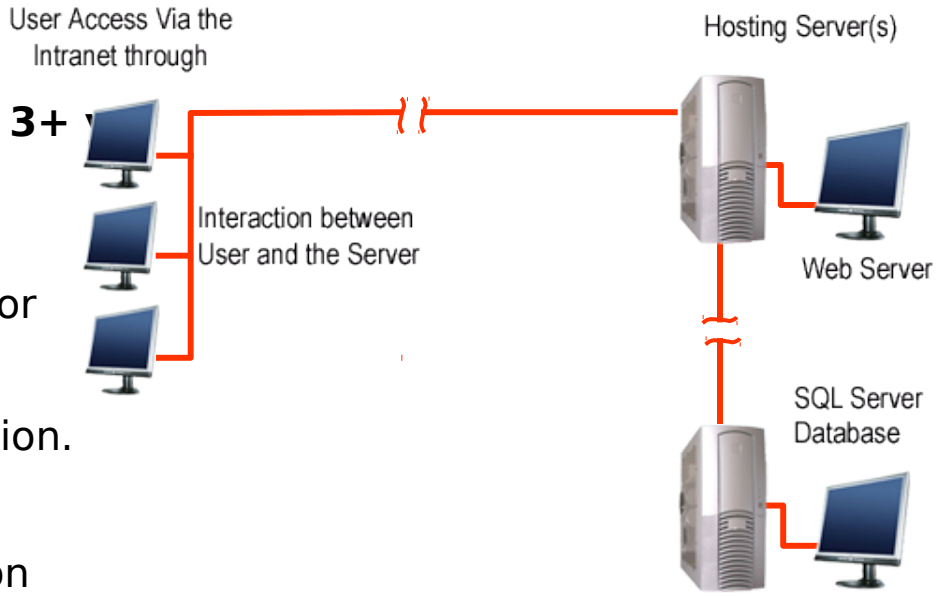
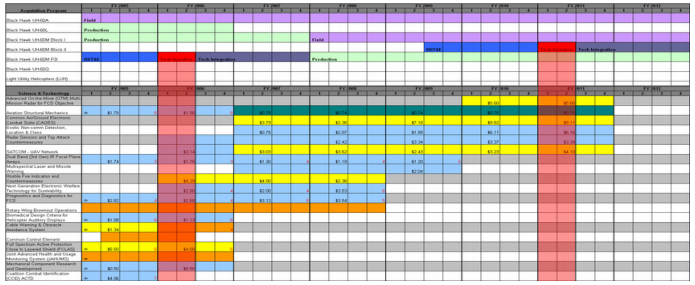
TATM Tool Suite Benefits

- **Government owned**
- **No software licenses fees**
- In use by the Army Aviation Community for **3+** v
- **Facilitates** TATM Process
- **User Friendly** and **Web-based**
- **Secure** login accounts
- **Flexible** to capture any S&T Project and / or any Acquisition Platform
- **Robust** - filtering of key parameters.
- **Dynamic** - continuously changing information.
- **Customizable Reports**
  - Technology Development Roadmaps with Windows for Technology Integration
  - Horizontal Technology Integration Matrix
  - S&T Project Reports
  - Technology Transition Plans
- **TATM Interactions**
  - AMCOM interface for financial roadmap
  - Investigation of USAF and USN interfaces
  - PEO Soldier interface
  - RS JPO Ground Robotics Master Plan (GRMP)



Technology Transition Roadmaps



Input Data that is Collected

- All S&T Project data normally found in quad charts, ASTMIS database, STO/ATO database, etc: descriptions, funding, TRL
- All Acquisition Program information for each platform: descriptions and key events, windows for transition opportunity
- Future Operating Capability Gaps
- Sustainment System Plans

Input Data that is Generated

- **Project to Platform relationships that are established during the WIPT assessment**
- **Sustainer Assessment**
- **FOC Gap Contribution**
- **Technology Transition Agreement information**
- **Integration Readiness, Manufacturing Readiness**
- **Risk description and management**

Data Output - Reports

- **Roadmap Reports**
  - Specific Platform / All related S&T Projects
  - Specific S&T Project / All related Platforms
  - Specific FOC Gap / All related S&T Projects
  - Specific SBS / All related S&T Projects
  - All Platforms
  - All S&T Projects
- **Cross-Reference Matrix Reports**
  - All Platforms / All S&T Projects
  - All FOC Gap/ All S&T Projects
  - All SBS / All S&T Projects
- **S&T Reports**
  - Aviation S&T Review Matrix
  - Individual S&T Project Detail Report
  - Individual S&T Project Summary Report
- **Platform Transition Planning Reports**
  - Transition Detailed Report
- **IPT Process Management Reports**

TRANSITION TECHNOLOGY FASTER

TATM Tool Suite
S&T Project Details Report

Project Description

Began Date & TRL, End Date & TRL

Project Objectives

Technical Approach

Funding, Agency, TRL, & Schedule Information

Platforms that are interested in the technology

Date Stamped for accuracy of information

Point of Contact

Technology Challenges

Capability / Payoff

Survivable, Affordable, Repairable Airframe Program

Project Description: Demonstrate a major advancement in airframe affordability, weight, survivability, and supportability for manned and unmanned objective force rotorcraft. SARAP will apply emerging technologies (TRL 3-5) in advanced structures, materials, analytical methods, and fabrication processes.

Project Began: 2002 with a beginning Technology Readiness Level (TRL) of 4

Project Ends: 2006 with an ending Technology Readiness Level (TRL) of 7

S&T Point of Contact: Mr. Jon Schuck, jschuck@aatd.avstar.army.mil, (757) 878-2101

Science and Technology Objective (ATO/STO): III.AV.2002.30

Project Objectives: * 25% reduced airframe weight * 40% reduced manufacturing labor hours per pound structure * 40% reduction in structural component development time * 50% reduced maintenance

Technology Challenges: * Structural load prediction accuracy * Low-variability design practices * Optimization and scalability of structures technologies * Full capability of advanced composites unrealized

Technology Approach: * Loads synthesis and data mining methods * Highly integrated low-cost structural concepts * Virtual prototype modeling and validation * Tailor design and certification standards for composites [Source: Orig. data entry] Tech demo's by two OEMs for Phase III TDA technology objectives. Configuration independent pervasive technology maturation / demonstration Scalable technology demonstrated on flying legacy test-beds Mature pervasive technologies Platform modernization relevant, flying technology demonstrations Validated virtual prototypes at each industrial partner Technology transition to current systems Applic. of adv. composites to Objective Force & unmanned vertical element for FCS

Capability/Requirements/Payoff: * Increased aircraft capability through reduced airframe weight for reduced fuel consumption * More lift capacity; longer range (28% improved payload OR 54% increased range) * Reduced maintenance requirements. * Longer operational useable life * Improved survivability and crashworthiness * Reduced procurement and O&S costs

Project Funding Information:

YEAR: 2002		TRL: 4	OTRs: 1, 2, 3, 4
PE/Project/Task/Wkpkg	Agency	Funding ($K)	Budget Category
62211A/32/AT208S	AMRDEC AATD	1961	6.2
63003A/313/12/ATD319	AMRDEC AATD	1951	6.3
62211A/B10/VS011S2	USARL VTD	$44	6.2

Platform(s) Supported:

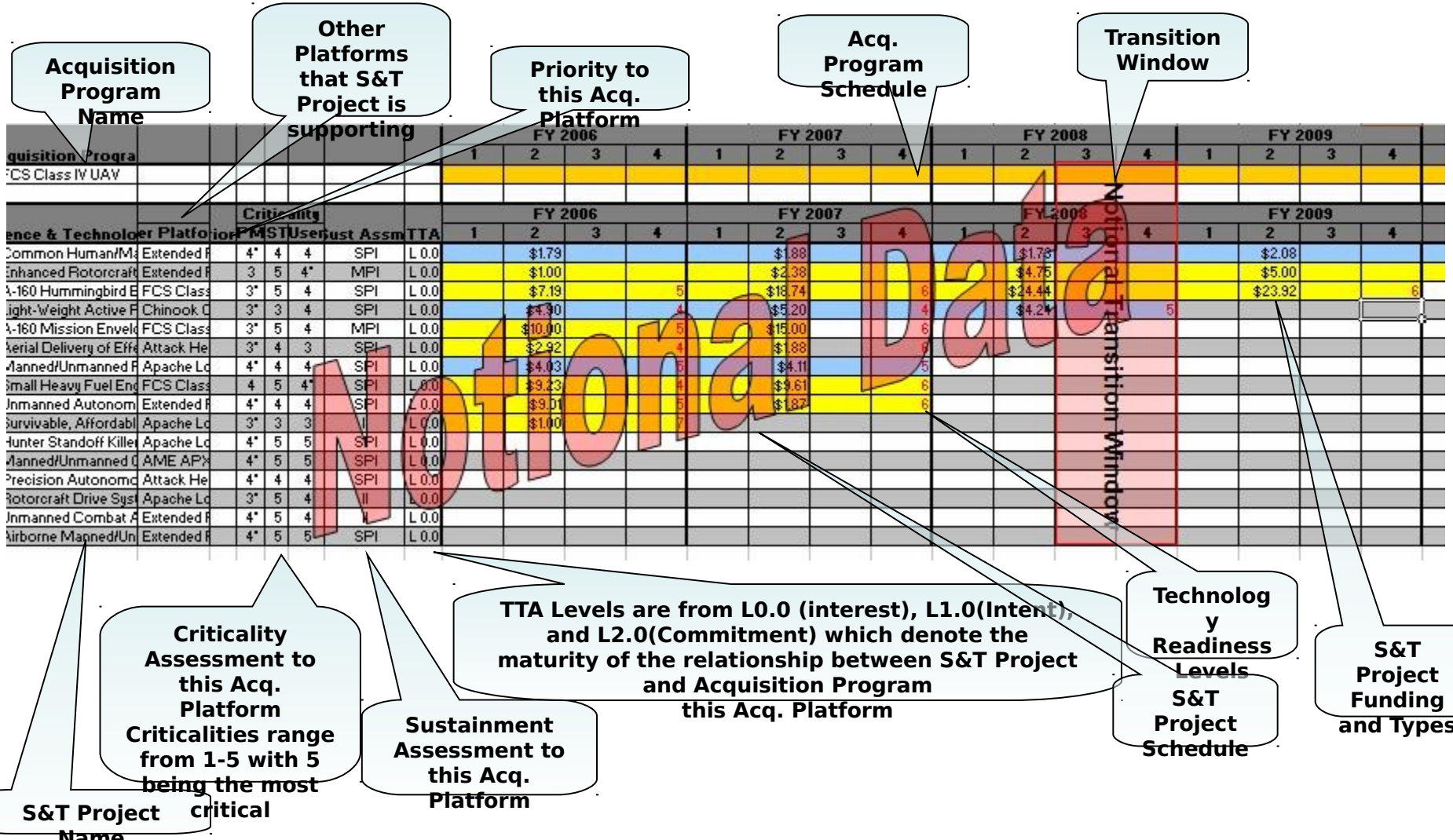
	Criticality			Sustainment		
Platform Name	PM	S&T	User	Assessment	TTA	TMPA
Extended Range Multi Purpose	3*	3	2	SPI	L 0.0	
FCS Class II UAV						
FCS Class III UAV						
FCS Class IV UAV	3*	3	3	II	L 0.0	

Date Entered: 4/4/2003 10:25:00 AM **Last Update:** 7/12/2005 10:08:00 AM

Notional Data

This report provides the user of the TATM Tool Suite one place to view any and all S&T Projects that are being worked in support of the Aviation Acquisition Programs.

TATM Tool Suite
Technology Transition Roadmap Report


Acquisition Program Name
Other Platforms that S&T Project is supporting
Priority to this Acq. Platform
Acq. Program Schedule
Transition Window
FY 2006
FY 2007
FY 2008
FY 2009
Criticality
PMST
User
Assm
TTA
Technology Transition Window
National Data
Criticality Assessment to this Acq. Platform Criticalities range from 1-5 with 5 being the most critical
Sustainment Assessment to this Acq. Platform
TTA Levels are from L0.0 (interest), L1.0(Intent), and L2.0(Commitment) which denote the maturity of the relationship between S&T Project and Acquisition Program this Acq. Platform
Technology Readiness Levels
S&T Project Schedule
S&T Project Funding and Types
S&T Project Name

The Technology Transition Roadmap provides one single place where S&T Project development schedules and the Acquisition Program Schedules can be assessed for planning integration into the Platform's Lifecycle

TATM Tool Suite
Transition Details Report

TTA Levels, Date Approved, and document Numbers

Does this Technology Support a Requirement and which one.

Criticality Assessments

Sustainment Assessments

Detailed Risk information about path forward for transitioning this technology to this Platform

Transition Details for Survivable, Affordable, Repairable Airframe Program (SARAP) in relation to **FCS Class IV UAV**

Current Technology Transition Agreement (TTA):

TTA: L 0.0 – Interest
TTA Document Number: A123456, Dated: 2/3/09
Transition Date: 8/30/2010
Priority: 5 for the FCS Class IV UAV

Supportability Assessment:

The technology in development may be applicable to the FCS Class IV UAV platform and shows great promise in potentially providing a capability to meet a requirement or multiple system requirements.. Additional development work and demonstration of key performance requirements is required prior to being able to express a specific intent or commitment related to this effort.

Technical Assessment:

The WIPT assessed this technology with the following criticality levels:

Program Manager (PM)	3*	IMPORTANT - Acceptable with Significant Reduction in Margin/Requirements Still Achieved.
User	3	IMPORTANT - Acceptable with Significant Reduction in Margin/Requirements Still Achieved.
Science & Technology (S&T)	3	IMPORTANT - Acceptable with Significant Reduction in Margin/Requirements Still Achieved.

* Denotes who leads the assessment.

Sustainer Assessment:

Insufficient Information (II) -- Insufficient Information to evaluate

Risk involve with Technology Transition:

No known risk have been identified at this time.

Notional Data

Provides one place to see all activity for technology transition plans for any technology being developed for any of the Aviation Acquisition Platforms.

TATM Tool Suite
Horizontal Technology Integration Report

RDECOM

AMRDEC STRENGTH THROUGH TECHNOLOGY

Summary of Technology Transition Agreements in place with S&T

Asterisk in the user column denotes no requirement being addressed by this S&T

Asterisk in the PM column denotes a requirement is being addressed by this S&T

Horizontal Technology Integration Matrix

S&T Project Name	TTA Level			FCS Class I UAV						FCS Class II UAV						FCS Class III UAV						FCS Class IV UAV					
				Criticality						Criticality						Criticality						Criticality					
	Interest	Intent	Commitment	PM	S&T	User	Sust	TTA	App	PM	S&T	User	Sust	TTA	App	PM	S&T	User	Sust	TTA	App	PM	S&T	User	Sust	TTA	App
A-160 Hummingbird Block II	1	0	0													2*	3	2			X	3*	5	4	SPI	L 0.0	X
A-160 Mission Envelope Expan	1	0	0													2*	3	2			X	3*	5	4	MPI	L 0.0	X
Aerial Delivery of Effects from U	1	0	0	1	2	2*	SPI		X	2*	3	3			X	3*	4	3			X	3*	4	3	SPI	L 0.0	X
Airborne Manned/Unmanned S	1	0	0							1*	3	2			X	3*	4	3			X	4*	5	5	SPI	L 0.0	X
Common Human/Machine Inter	2	0	0	4*	4	4	MPI	L 0.0	X													4*	4	4	SPI	L 0.0	X
Directed Energy/Non-Lethal We	0	0	0	1	2	1*	II		X																		X
DP-5X Program ClassIII UAV -	0	0	1													4*	5	5	SPI	L 2.0	X						
Enhanced Rotorcraft Drive Sys	1	0	0													3*	5	4			X	3	5	4*	MPI	L 0.0	X
Hunter Standoff Killer Team (H	1	0	0							1*	3	2			X	2*	4	3			X	4*	5	5	SPI	L 0.0	X
Light-Weight Active Rotor Conc	1	0	0																		X	3*	3	4	SPI	L 0.0	X
Low Cost Precision Kill (LCPK)	0	0	0													2*	3	2			X						
Manned/Unmanned Comm A	1	0	0							2*	4	2			X	3*	5	3			X	4*	5	5	SPI	L 0.0	X
Manned/Unmanned Rotorcraft	1	0	0																		X	4*	4	4	SPI	L 0.0	X
Micro Air Vehicle (MAV) ACTD	0	0	1	4*	5	4	MPI	L 2.0	X																		
Organic Air Vehicle II (OAV-II)	0	0	1							3*	3	4	SPI	L 2.0	X												
Precision Autonomous Landing	2	0	0	4*	5	4	SPI	L 0.0	X						X						X	4*	4	4	SPI	L 0.0	X
Quick-Meds	0	0	0																								X
Rotorcraft Drive Systems for th	1	0	0													2*	3	3			X	3*	5	4	II	L 0.0	X
Small Heavy Fuel Engine (HFE	1	0	0																		X	4	5	4*	SPI	L 0.0	X
Survivable, Affordable, Repaira	1	0	0												X						X	3*	3	3	II	L 0.0	X
Unmanned Autonomous Collab	2	0	0	3*	3	2	SPI	L 0.0	X						X							4*	4	4	SPI	L 0.0	X
Unmanned Combat Armed Rot	1	0	0													3*	3	3			X	4*	5	4	II	L 0.0	X
Wide Area Airborne Minefield D	0	0	0												X						X						X
	19	0	3	Summary						Summary						Summary						Summary					
				S&T Applicability =					27	S&T Applicability =					35	S&T Applicability =					45	S&T Applicability =					47
				S&T in Interest TTA =					3	S&T in Interest TTA =					0	S&T in Interest TTA =					0	S&T in Interest TTA =					16
				S&T in Intent TTA =					0	S&T in Intent TTA =					0	S&T in Intent TTA =					0	S&T in Intent TTA =					0
				TTA Commitment =					1	TTA Commitment =					1	TTA Commitment =					1	TTA Commitment =					0

Notional Data

Looking at the row tells you the impact of the S&T Project across multiple platforms

Criticalities range from 1-5 with 5 being the most critical

The report was designed using Notional Data.

TTA Levels - L0.0 (interest), L1.0(Intent), and L2.0(Commitment) which denote the maturity of the relationship between S&T Project and Acquisition Program

If Asterisk in PM criticality Column and TTA Level is 2.0 then requirements have been vetted.

Looking at the column tells you the impact of the integration of S&T Projects to meet the requirements of the Platform

Questions/Comments